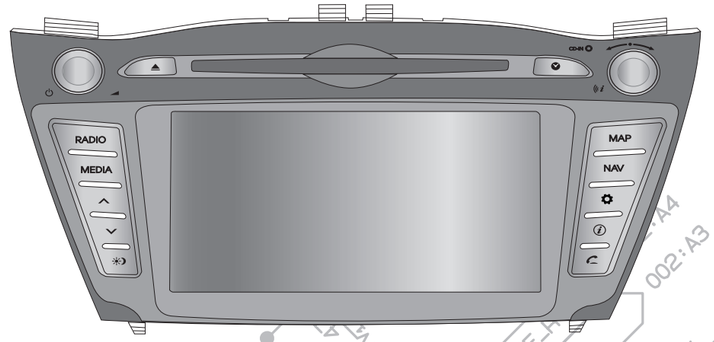
SERVICE MANUAL

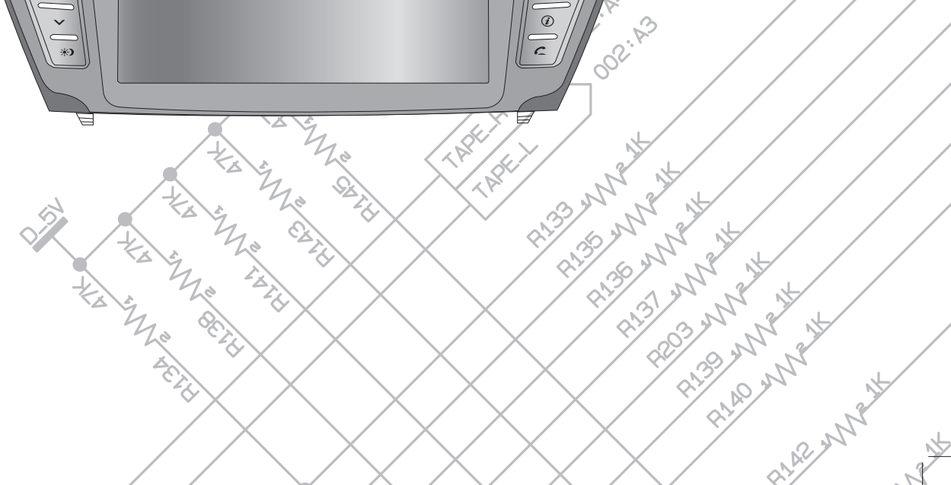
MODELS : LAN8900EHLM/ LAN8904EHLM

AUDIO & NAVIGATION SYSTEM

SERVICE MANUAL

MODELS : LAN8900EHLM/ LAN8904EHLM





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SECTION 1. SPECIFICATION

[CONTENTS]

• SPECIFICATION 1-1

SPECIFICATION

GENERAL

Output Power	.45 W x 8 CH (Max.)
Power Source	DC 12 V
Speaker impedance	2 Ω
Ground System	Negative
Dimensions (W x H x D)	.270 x 140 x 210 mm
Net Weight	2.8 kg

DISPLAY

LCD	16.5 cm TFT LCD
Resolution	.800 X 480
Back Light	CCFL type

CD SECTION

Frequency Response	20 Hz to 20 KHz
S/N Ratio	60 dB
Distortion	0.3 %
Channel Separation (1 kHz)	50 dB

RADIO SECTION

FM

Frequency Range	87.5 to 108 MHz
S/N Ratio	50 dB
Distortion	1 %
Usable Sensitivity	10 dBμV

AM (MW)

Frequency Range	522 to 1620 KHz
S/N Ratio	45 dB
Distortion	1.0 %
Usable Sensitivity	38 dBμV

SECTION 2. NAME OF EACH PART

[CONTENTS]

• FRONT 2-1
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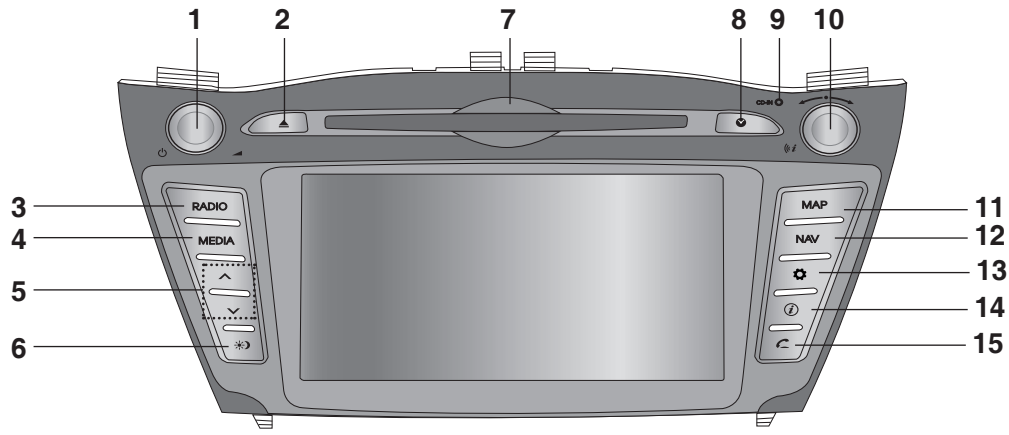
FRONT



1. Left rotary (⏻ / ◢)
- Press: Power on/off
- Turn: Volume control

2. Eject ⏏
Press to eject a disc from the unit.

3. RADIO
Selects the FM/AM band.

4. MEDIA
Selects a source: CD, USB, iPod, AUX

5. ∧ / ∨
- Press this button.
  - Automatic tuning: RADIO
  - Track up/down: USB CD iPod
- Press and hold this button.
  - Search (FF/REW): USB CD iPod

6. Display on/off (☀)
Press to switch between the display on and off.

7. Disc slot

8. Time (✔)
Press to display the digital/ analog clock in power on/ off status.

9. CD IN indicater light (CD IN)
When a disc is inserted, the indicater is illuminated.

10. Right rotary (⌒)
Rotate it clockwise/counterclockwise.
- Searches the previous or next radio frequency.
  - Manual tuning
- Skips a track/file up/down in all list screen.
- ZOOM IN/ ZOOM OUT
  - Rotate to change the map scale on the map screen.

Repeat voice guidance (((i))
Press to repeat the voice guidance.

11. MAP
Press to display the current location map screen.

12. NAV
Press to enter a destination menu.
Various methods for entering a destination are available.

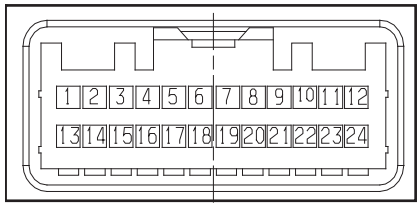
13. SETUP (✿)
- Press to access system settings.
- Press and hold to check the device ID, the software version, the navigation version, and the map version.

14. Info(ⓘ)
Press to view the destination, route, and traffic information when the route guidance is active.
- Destination: Shows the information of current vehicle position and destination.
- Route: Shows the route information from the current vehicle position to the destination.
- Traffic: Shows the traffic information.
  - Traffic Info On Route: The list of traffic information found on the recommended route from the current vehicle position to the destination is displayed.
  - Traffic Info Nearby: The list of traffic information around the current vehicle position is displayed.

15. PHONE (✆)
Use to enable Bluetooth Hands-Free Phone.

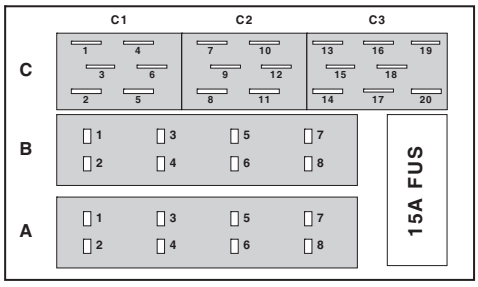
CONNECTOR TERMINAL FUNCTION

A. Additional connector for option 24pin TYCO AMP 1318853



No	NAME
1	SPDIF_OUT+(Option: External AMP)
2	SPDIF_OUT-(Option: External AMP)
3	SPDIF_GND(Option: External AMP)
4	NC
5	NC
6	NAVI_VOICE+(Option: External AMP)
7	XM_AUDIO_R(Option: XM_Ready)
8	XM_AUDIO_L(Option: XM_Ready)
9	AMBIENT
10	NC
11	NC
12	MM_CAN_HIGH(Option: External AMP)
13	CAMERA_B+(Option: Rear_CAMERA)
14	CAMERA_GND(Option: Rear_CAMERA)
15	CAMERA_CVBS(Option: Rear_CAMERA)
16	CAMERA_VGND(Option: Rear_CAMERA)
17	NC
18	NAVI_VOICE-(Option: External AMP)
19	XM_AUDIO_GND(Option: XM_Ready)
20	XM_POWER_GND(Option: XM_Ready)
21	XM_B+(Option: XM_Ready)
22	NC
23	CAN_GND(Option: External AMP)
24	MM_CAN_LOW(Option: External AMP)

B. ISO 36pin POWER CONNECTOR

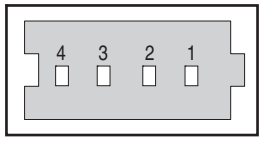


A. CAR INTERFACE	
A1	SPEED
A2	DIRECTION
A3	TAIL SW (ILL+)
A4	+12 V ACC
A5	REMOTE ANTENNA
A6	PWM ILL(ILL-)
A7	+12 V BATT
A8	GROUND

B. SPEAKER OUTPUT	
B1	REAR RIGHT+
B2	REAR RIGHT-
B3	FRONT RIGHT+
B4	FRONT RIGHT-
B5	FRONT LEFT+
B6	FRONT LEFT-
B7	REAR LEFT+
B8	REAR LEFT-

C1. CAR INTERFACE	
C1	MIC+ (BT, eCall)
C2	Parking
C3	ALT_IN
C4	MIC- (BT, eCall)
C5	Door Unlock
C6	Auto Light
C2. CAR INTERFACE	
C7	AUX R-IN
C8	Steering_Wheel Remocon
C9	AUX GND
C10	AUX L-IN
C11	Steering_Wheel Remocon_GND
C12	AUX DETECT
C3. CAR INTERFACE	
C13	AUX_VGND
C14	AUX_CVBS_IN
C15	NC
C16	NC
C17	NC
C18	NC
C19	HS CAN L (Option: Remote Display)
C20	HS CAN H (Option: Remote Display)

C. USB CONNECTOR



No	NAME
1	USB/IPOD GND
2	USB D+/IPOD_RX
3	USB D-/IPOD_TX
4	USB/IPOD_5 V

SECTION 3. TOTAL WIRING/BLOCK DIAGRAMS

[CONTENTS]

• WIRING DIAGRAM 3-1
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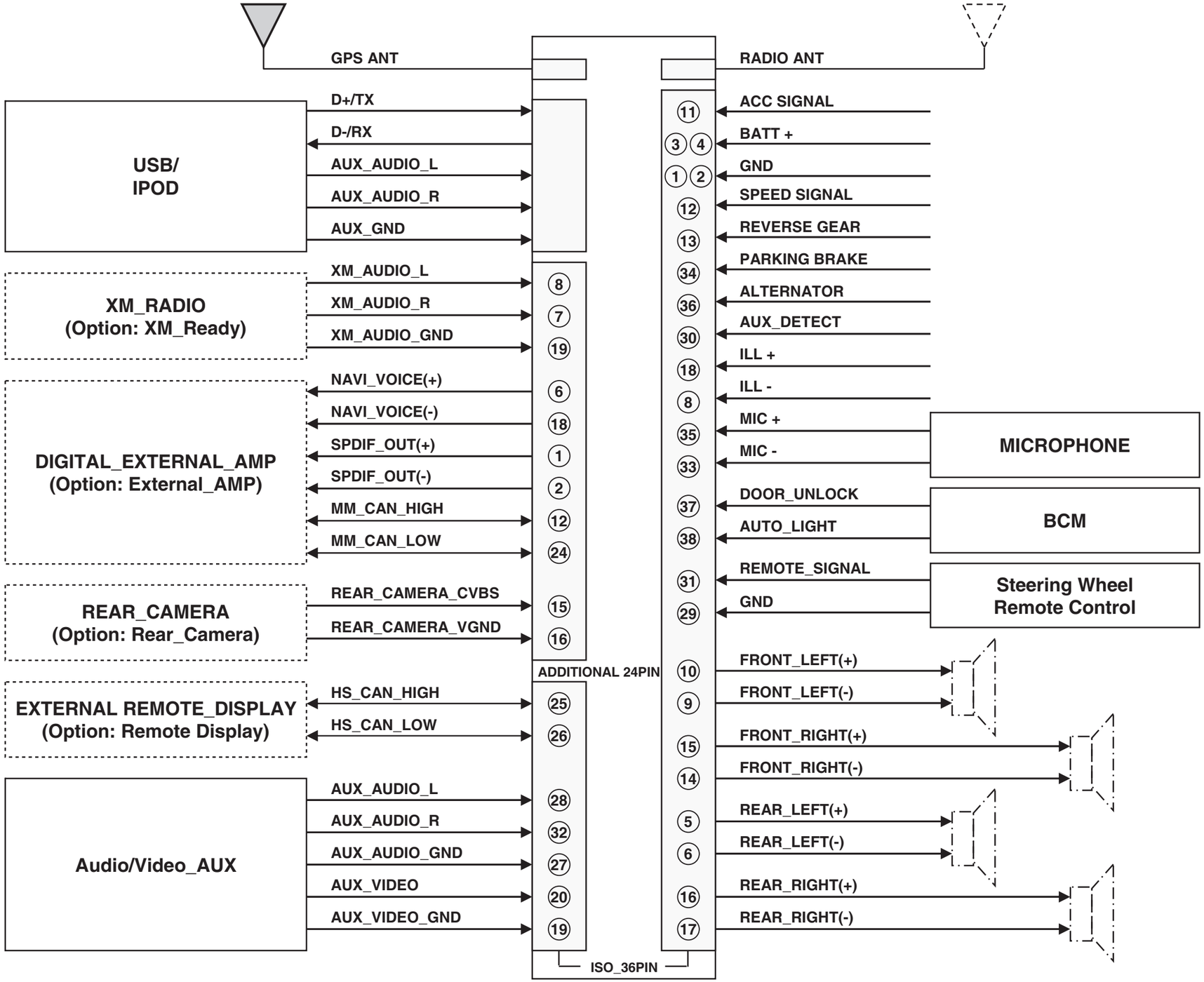
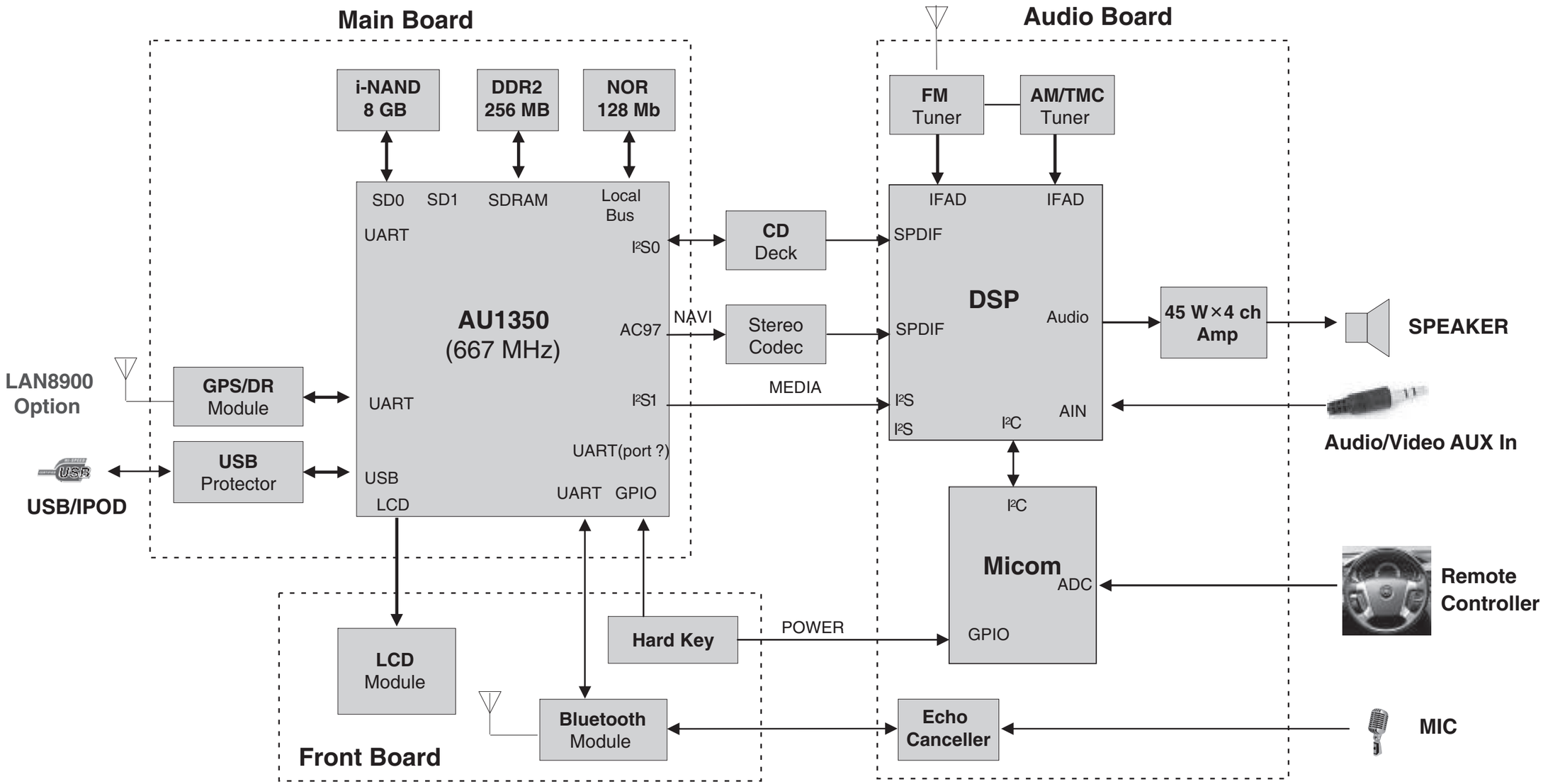
• BLOCK DIAGRAM(S/W) 3-5

WIRING DIAGRAM

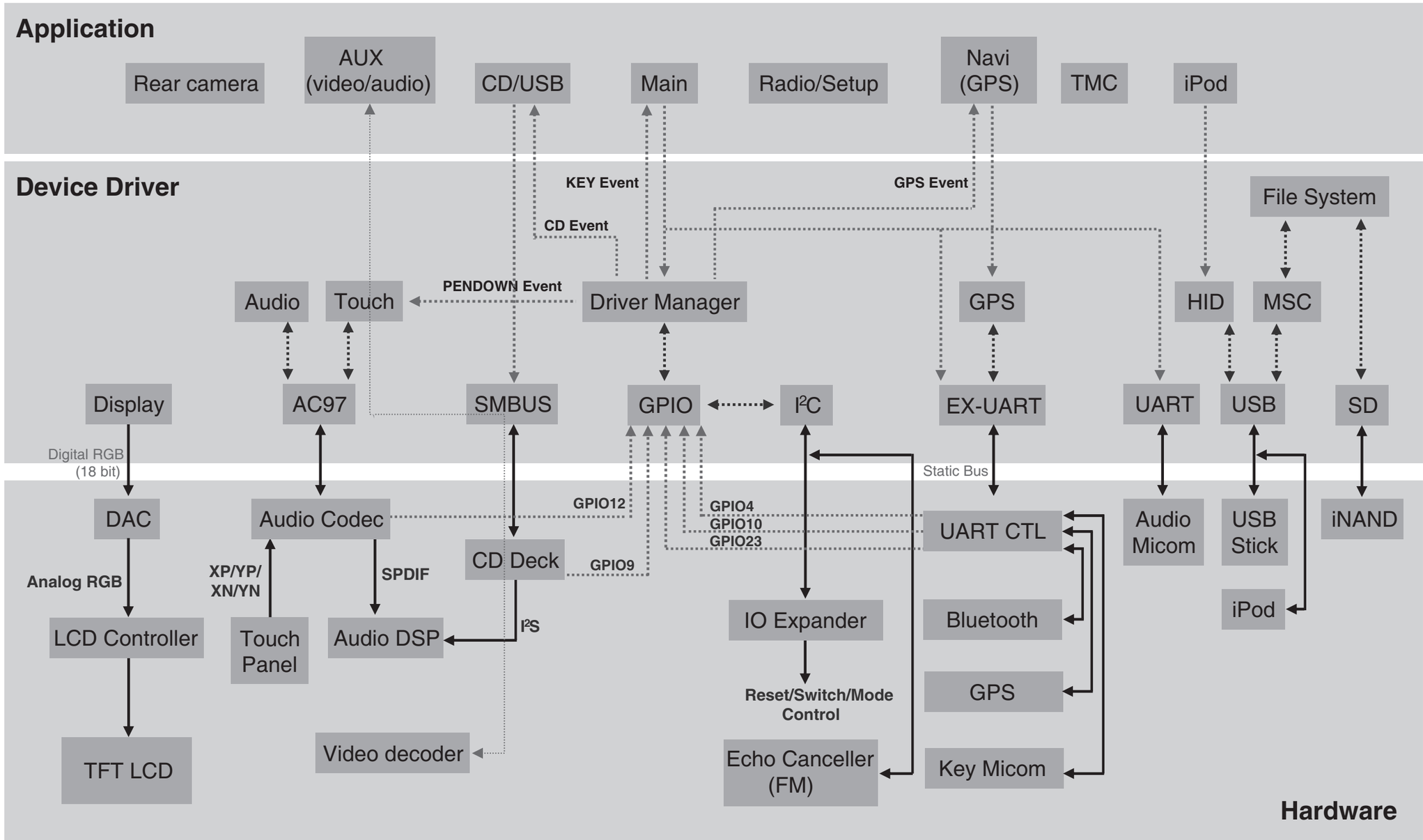


3-1 3-2

BLOCK DIAGRAM (H/W)



BLOCK DIAGRAM (S/W)



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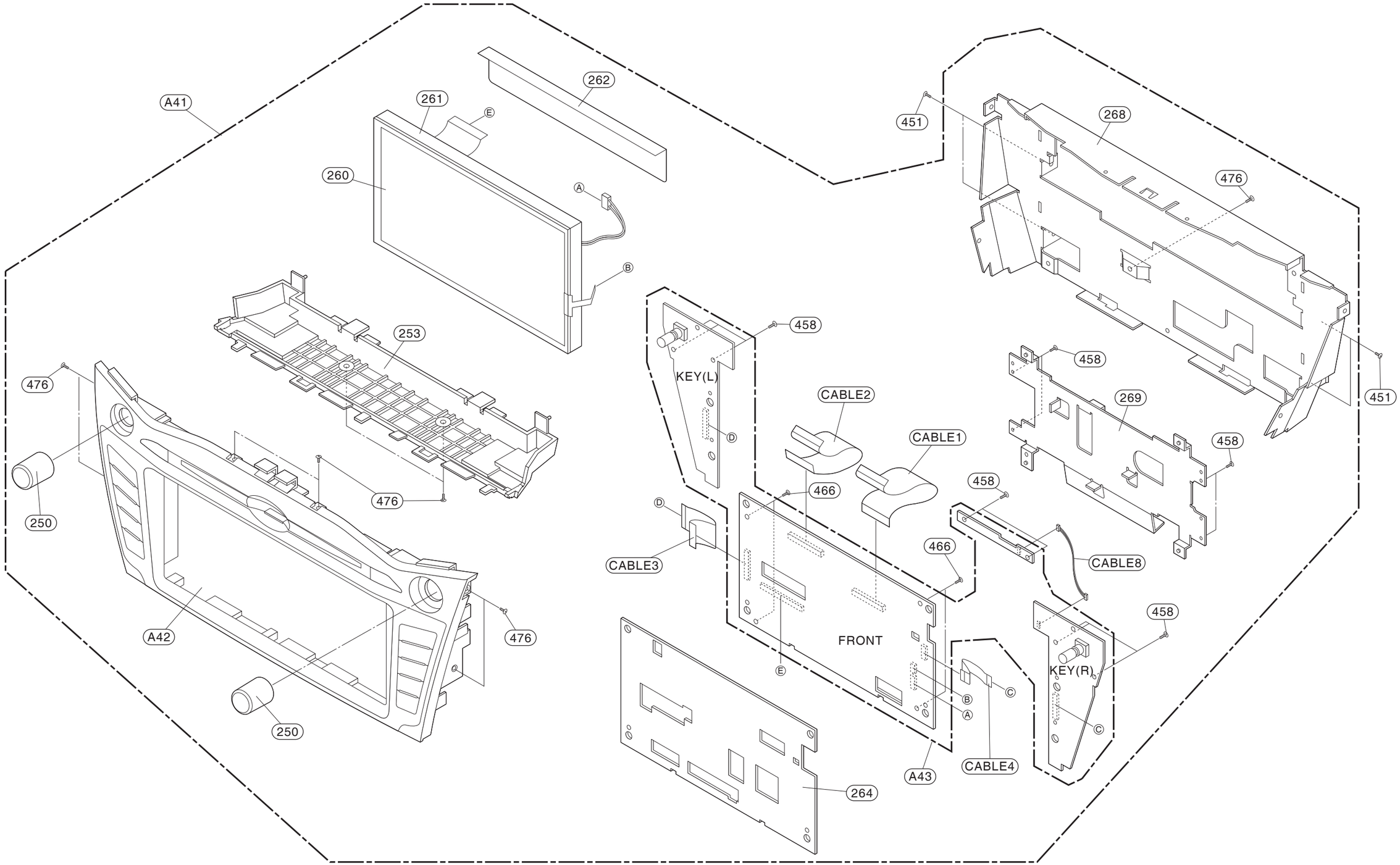
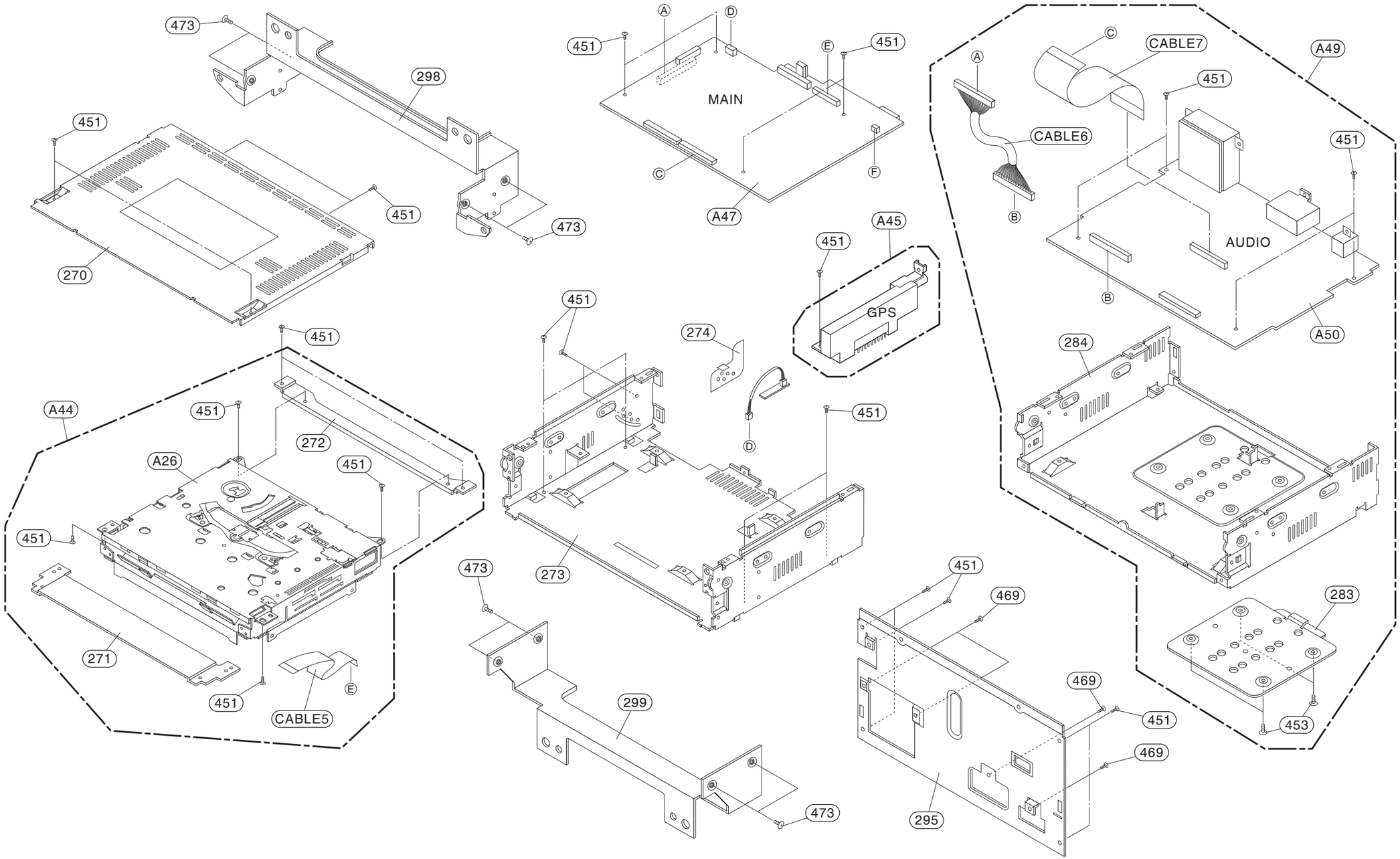
• FRONT PART 4-1
• CABINET & MAIN FRAME PART 4-3

FRONT PART



4-1 4-2

CABINET & MAIN FRAME PART

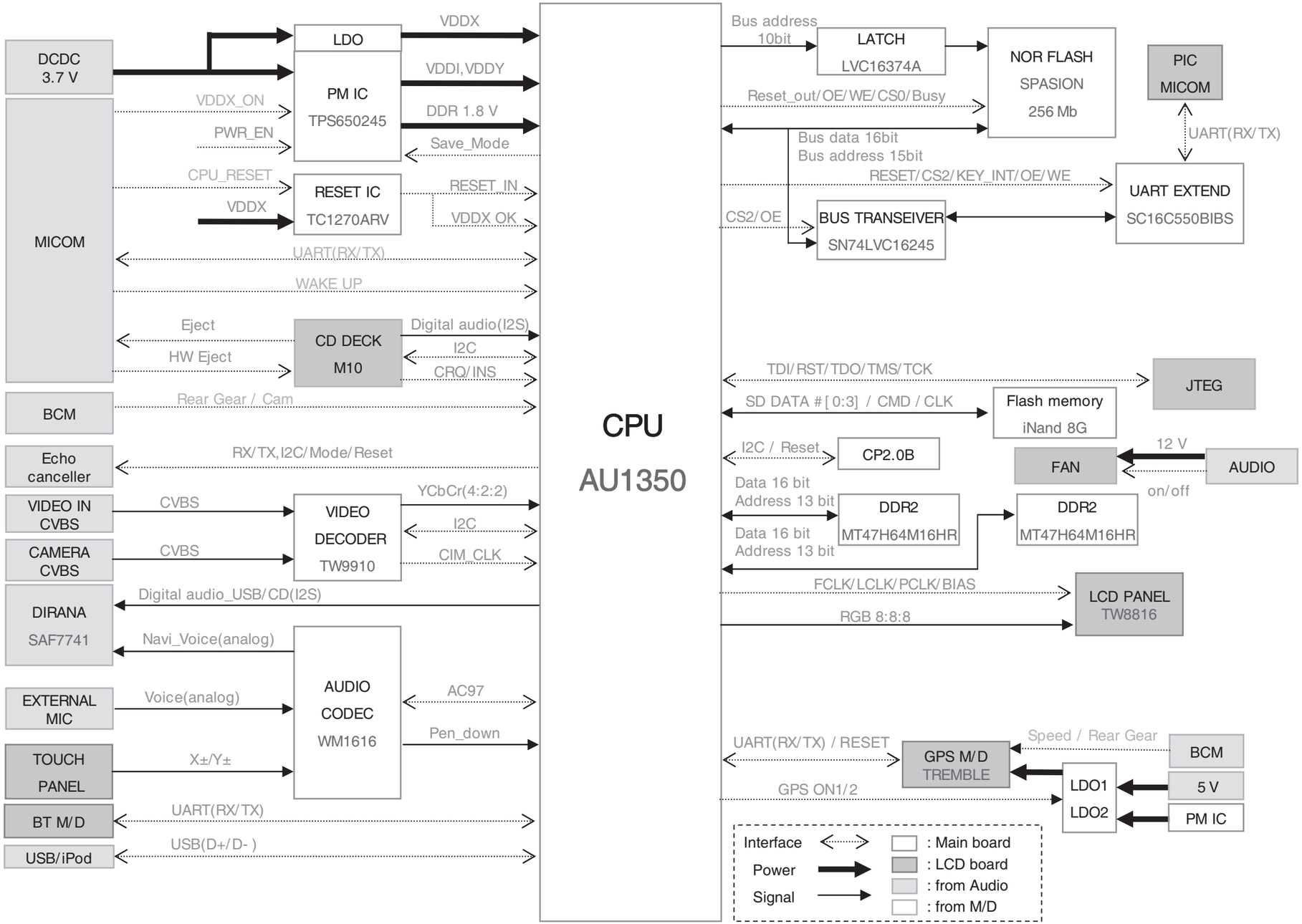


SECTION 5. MAIN PART

[CONTENTS]

• MAIN BLOCK DIAGRAM 5-1
• MAIN CONNECTOR PIN DESCRIPTION 5-3
• MAIN PRINTED CIRCUIT BOARD (TOP VIEW) 5-5
• MAIN PRINTED CIRCUIT BOARD (BOTTOM VIEW) 5-7

MAIN BLOCK DIAGRAM



5-1 5-2

MAIN CONNECTOR PIN DESCRIPTION

PIN	NAME
CN301	
1	GND
2	D+
3	D-
4	VBUS(5 V)
CN702	
1	GND
2	5 V
3	FAN_12 V
4	GND
5	USB_5 V
6	USB_5 V
7	GND
8	GND
9	CD_8.0 V
10	CD_8.0 V
11	GND
12	GND
13	3.75 V
14	3.75 V
15	GND
CN705	
1	GND
2	SCLK
3	WCLK
4	GND
5	DATA
6	SPDIF
7	GND
8	3.3 V
9	CRST
10	INSERT SW
11	EJECT
12	I2C SDA
13	I2C CRQ
14	I2C SCL
15	GND
16	GND
17	8 V
18	8 V
CN901	
1	CAMERA_CVBS
2	CAMERA_GND
3	AUX_CVBS
4	AUX_GND

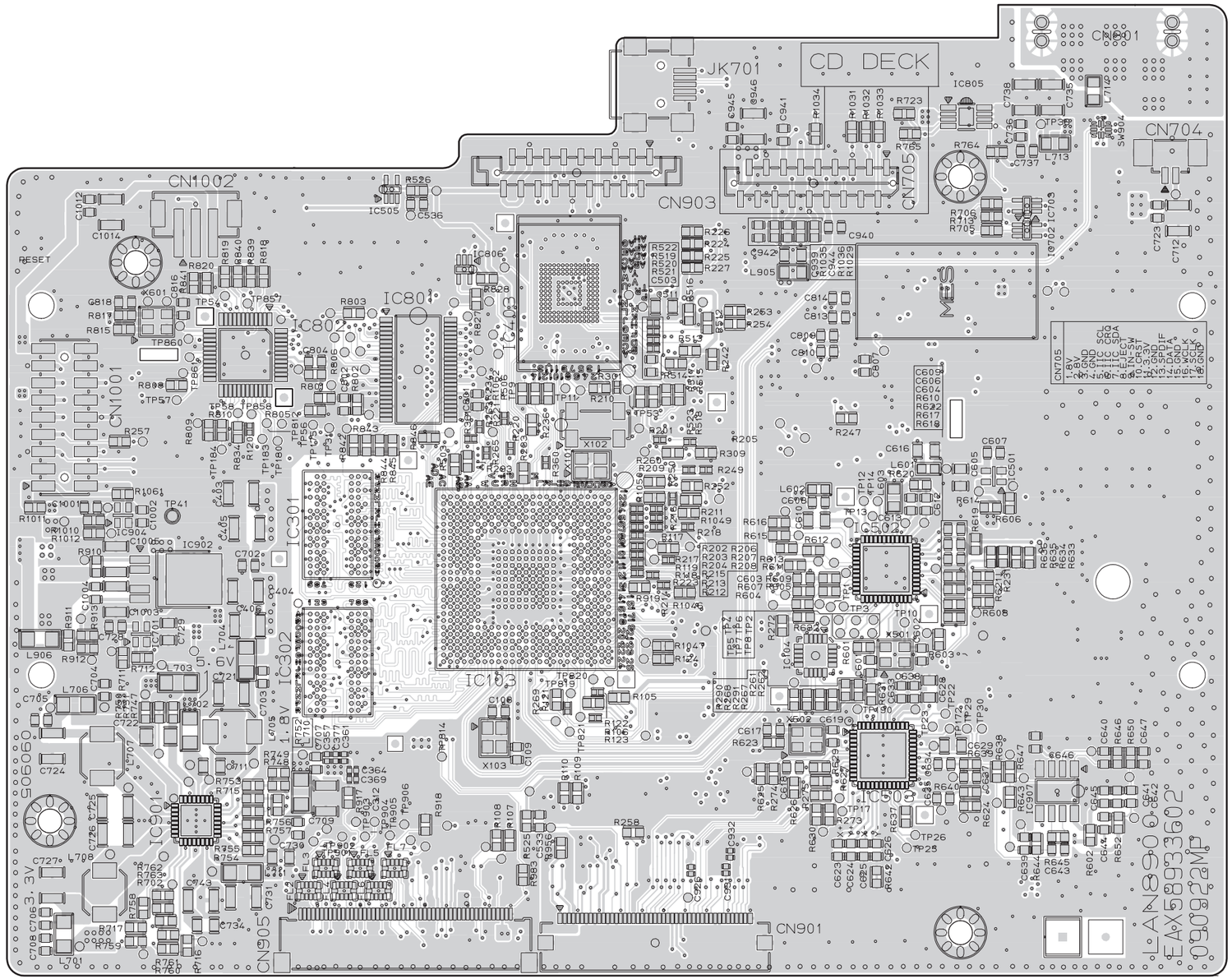
PIN	NAME
5	GND
6	MIC+
7	GND
8	MIC-
9	GND
10	NAVI_R
11	NAVI_L
12	GND
13	CD_3.3 V_CTL
14	GND
15	T_SENSOR
16	CD_RESET
17	REVERSE_GEAR
18	GND
19	CD_EMERGENCY
20	CPU_SLEEP
21	EC_RESET
22	EC_MODE
23	DCDC_ON
24	CD_INSERT
25	CPU_RESET
26	SPEED_PULSE
27	ART_TX
28	ART_EN
29	ART_RX
30	CD_SPDIF
31	CD_WS
32	CD_SCK
33	CD_SD
34	MEDIA_WS
35	MEDIA_SCK
36	MEDIA_SD
37	GND
38	GND
39	MICOM_TX
40	MICOM_RX
41	EC_DBG_RX
42	EC_DBG_TX
43	I2C_SDA_ECHO
44	I2C_SCL_ECHO
45	GND
CN905	
1	GND
2	R0
3	R1

PIN	NAME
4	R2
5	R3
6	R4
7	R5
8	R6
9	R7
10	G0
11	G1
12	G2
13	G3
14	G4
15	G5
16	G6
17	G7
18	B0
19	B1
20	B2
21	B3
22	B4
23	B5
24	B6
25	B7
26	GND
27	DCLK
28	DDE
29	DHSYNC
30	DVSYNC
31	GND
32	GND
33	TP_YL
34	TP_XL
35	TP_YH
36	TP_XH
37	GND
38	3.3 V_BT
39	3.3 V_BT
40	3.3 V_BT
41	GND
42	KEY_RX
43	KEY_TX
44	BT_RX
45	BT_TX
46	NC
47	CVBS
48	CVBS_GND

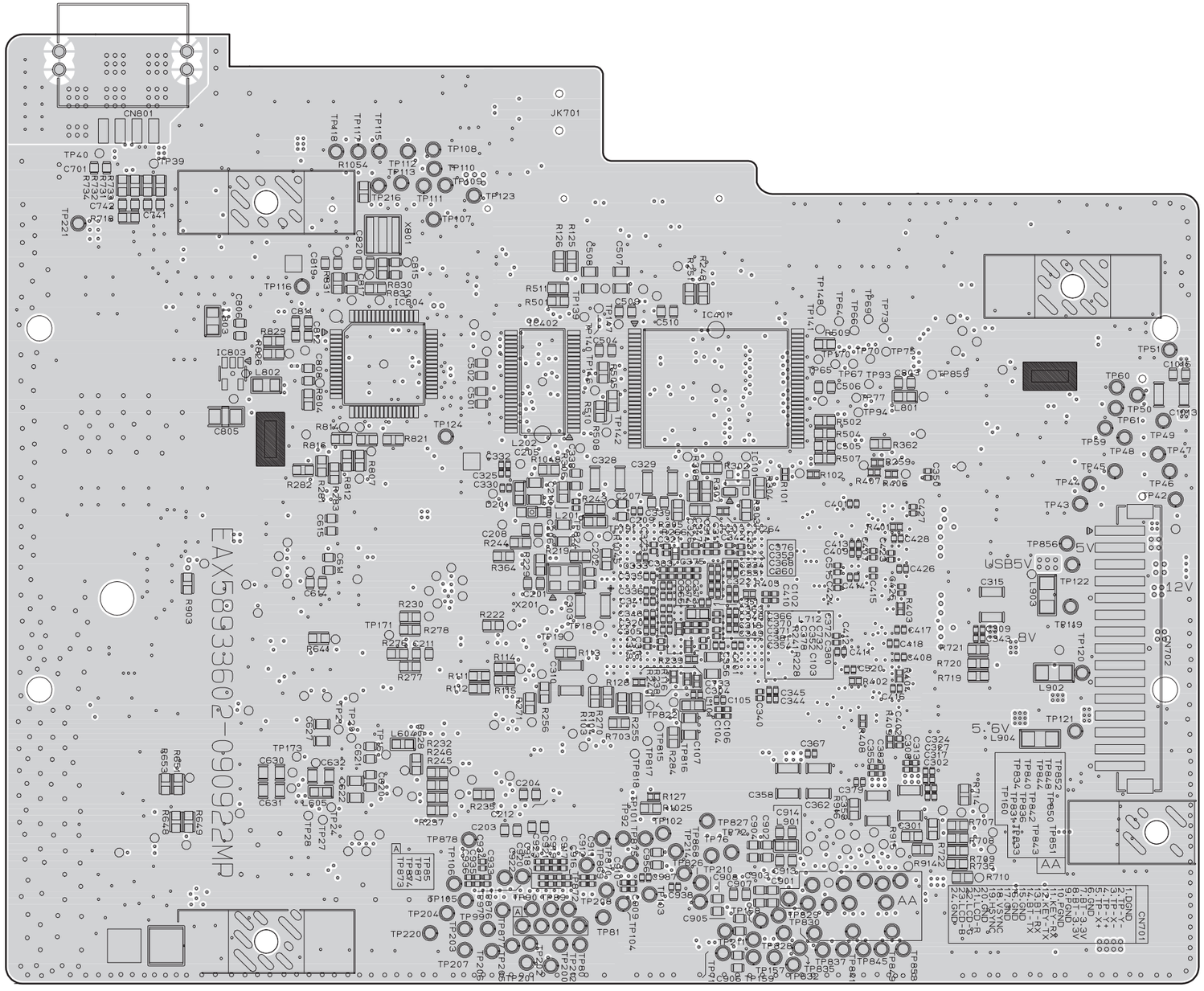
PIN	NAME
49	CVBS_DETECT
50	GND
CN1001	
1	VCC(3.3 V)
2	SDRAM(3.3 V)
3	DGND
4	TX0
5	RX0
6	TX1
7	RESET
8	RESERVED
9	RESERVED
10	FORWARD_BACK
11	SPEED
12	AGND
13	ANT_SHORT
14	ANT_OPEN
15	GYRO
16	AGND
17	VCC(5 V)
18	DGND
JK701	
1	VCC
2	D-
3	D+
4	NC
5	GND

MEMO

MAIN PRINTED CIRCUIT BOARD (TOP VIEW)



MAIN PRINTED CIRCUIT BOARD (BOTTOM VIEW)



SECTION 6. AUDIO PART

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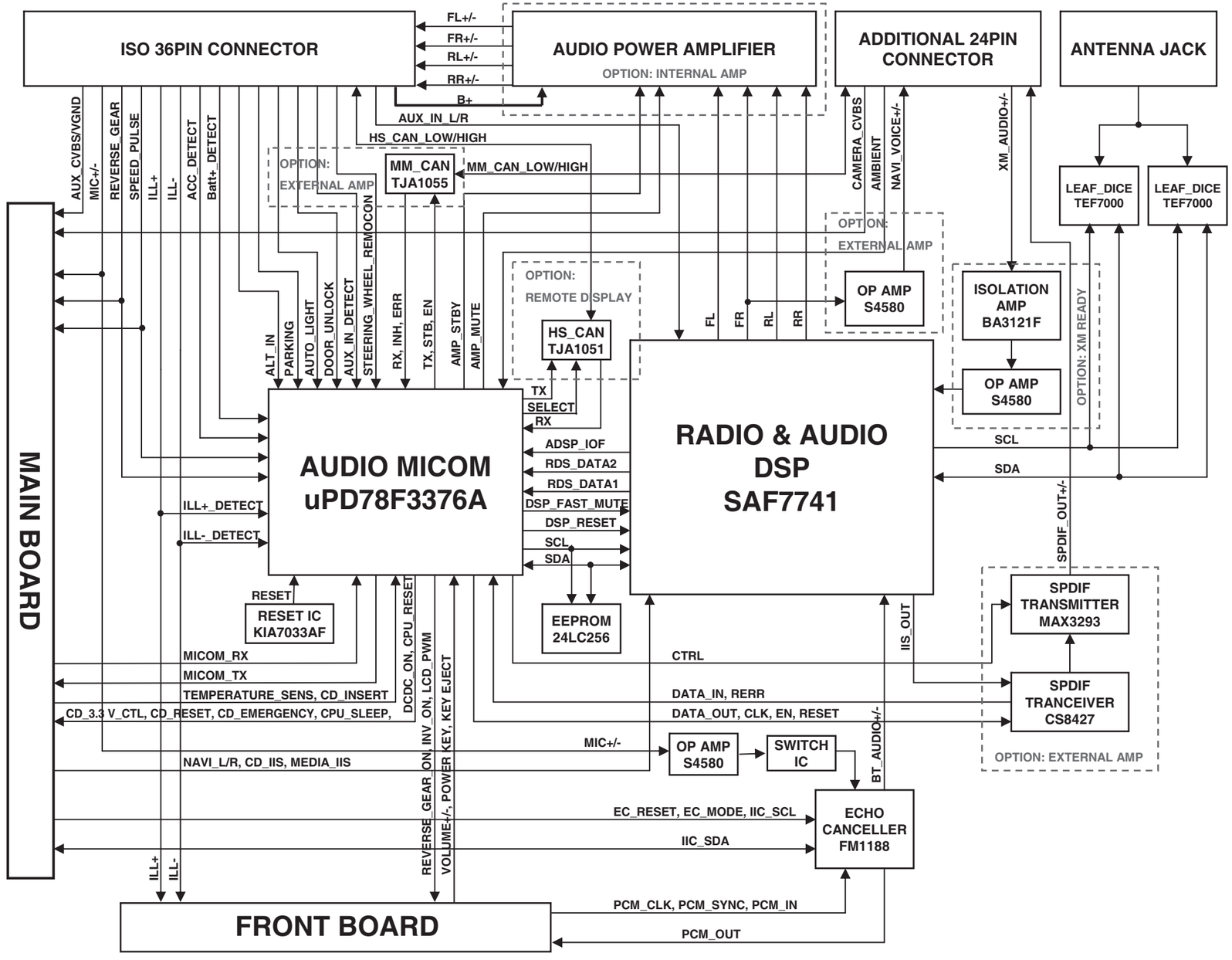
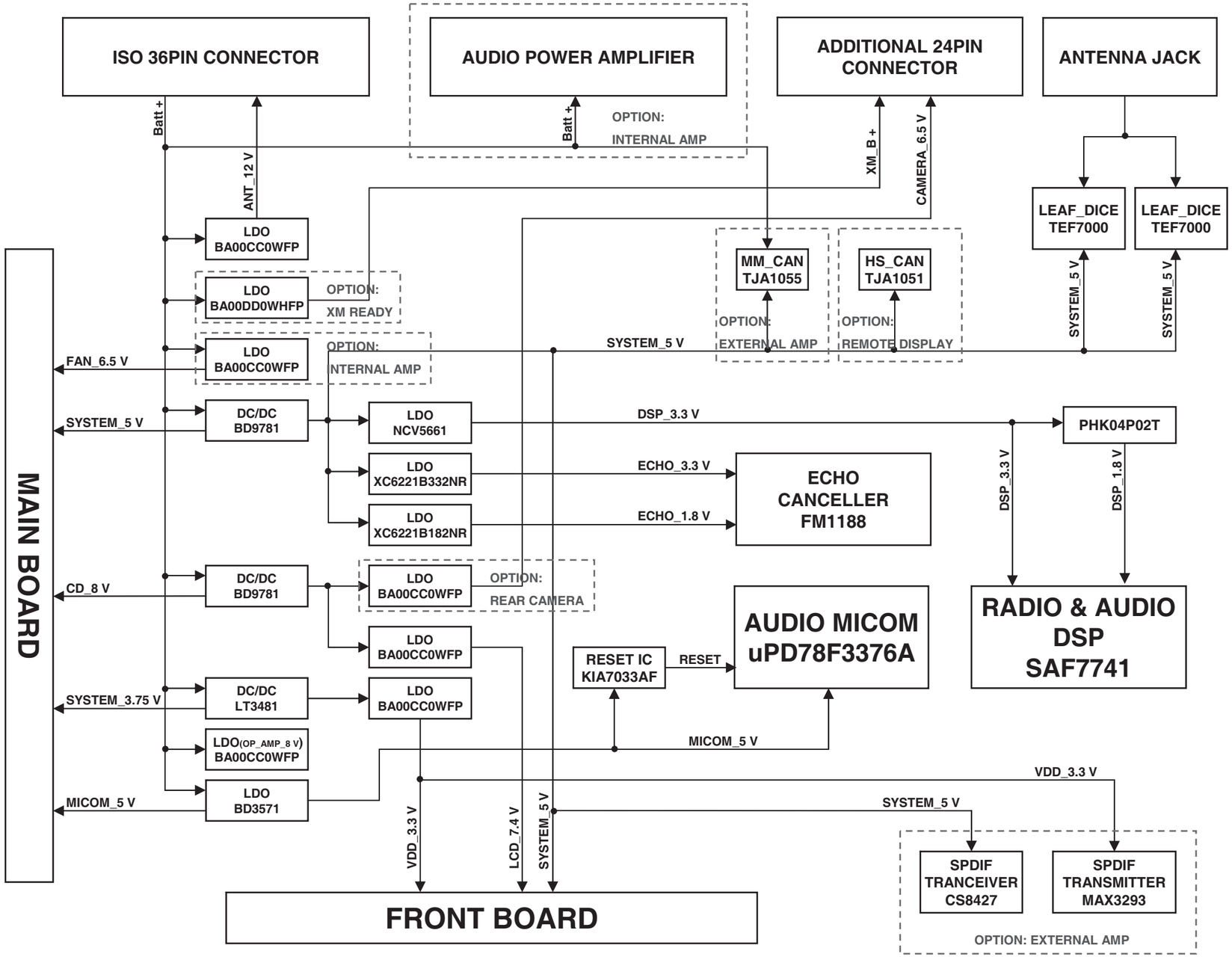
• AUDIO CONNECTOR PIN DESCRIPTON 6-5
• AUDIO PRINTED CIRCUIT BOARD (TOP VIEW) 6-7
• AUDIO PRINTED CIRCUIT BOARD (BOTTOM VIEW) 6-9

AUDIO BLOCK DIAGRAM

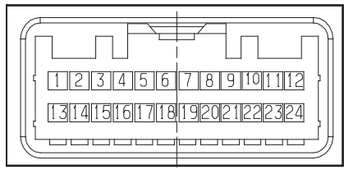


POWER BLOCK DIAGRAM



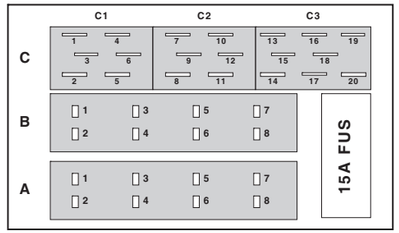
AUDIO CONNECTOR PIN DESCRIPTON

A. Additional connector for option 24pin TYCO AMP 1318853



No	NAME
1	SPDIF_OUT+(Option: External AMP)
2	SPDIF_OUT-(Option: External AMP)
3	SPDIF_GND(Option: External AMP)
4	NC
5	NC
6	NAVI_VOICE+(Option: External AMP)
7	XM_AUDIO_R(Option: XM_Ready)
8	XM_AUDIO_L(Option: XM_Ready)
9	AMBIENT
10	NC
11	NC
12	MM_CAN_HIGH(Option: External AMP)
13	CAMERA_B+(Option: Rear_CAMERA)
14	CAMERA_GND(Option: Rear_CAMERA)
15	CAMERA_CVBS(Option: Rear_CAMERA)
16	CAMERA_VGND(Option: Rear_CAMERA)
17	NC
18	NAVI_VOICE-(Option: External AMP)
19	XM_AUDIO_GND(Option: XM_Ready)
20	XM_POWER_GND(Option: XM_Ready)
21	XM_B +(Option: XM_Ready)
22	NC
23	CAN_GND(Option: External AMP)
24	MM_CAN_LOW(Option: External AMP)

B. ISO 36pin POWER CONNECTOR

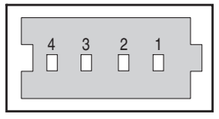


A. CAR INTERFACE	
A1	SPEED
A2	DIRECTION
A3	TAIL SW (ILL+)
A4	+12 V ACC
A5	REMOTE ANTENNA
A6	PWM ILL(ILL-)
A7	+12 V BATT
A8	GROUND

B. SPEAKER OUTPUT	
B1	REAR RIGHT+
B2	REAR RIGHT-
B3	FRONT RIGHT+
B4	FRONT RIGHT-
B5	FRONT LEFT+
B6	FRONT LEFT-
B7	REAR LEFT+
B8	REAR LEFT-

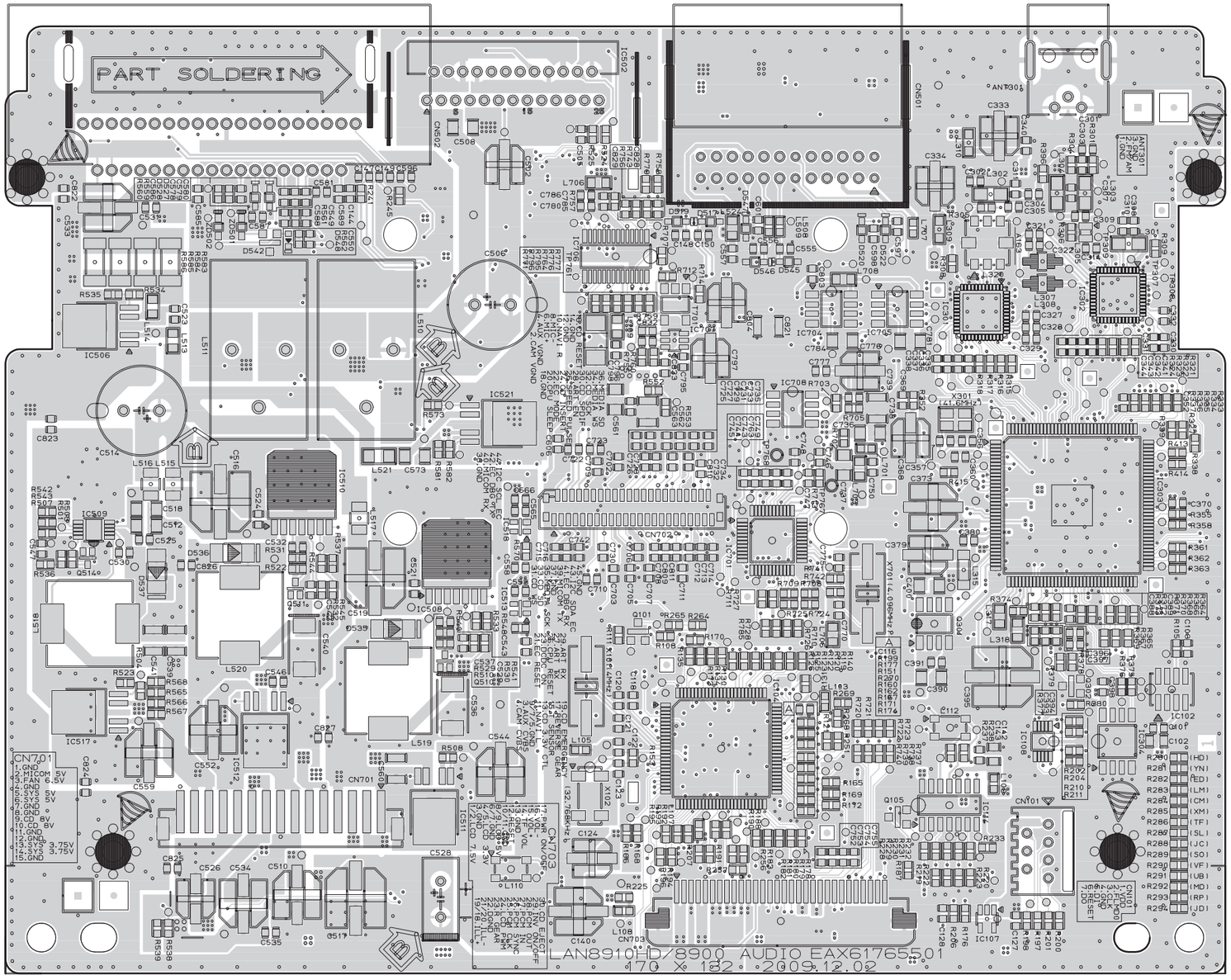
C1. CAR INTERFACE	
C1	MIC+ (BT, eCall)
C2	Parking
C3	ALT_IN
C4	MIC- (BT, eCall)
C5	Door Unlock
C6	Auto Light
C2. CAR INTERFACE	
C7	AUX R-IN
C8	Steering_Wheel Remocon
C9	AUX GND
C10	AUX L-IN
C11	Steering_Wheel Remocon_GND
C12	AUX DETECT
C3. CAR INTERFACE	
C13	AUX_VGND
C14	AUX_CVBS_IN
C15	NC
C16	NC
C17	NC
C18	NC
C19	HS CAN L (Option: Remote Display)
C20	HS CAN H (Option: Remote Display)

C. USB CONNECTOR

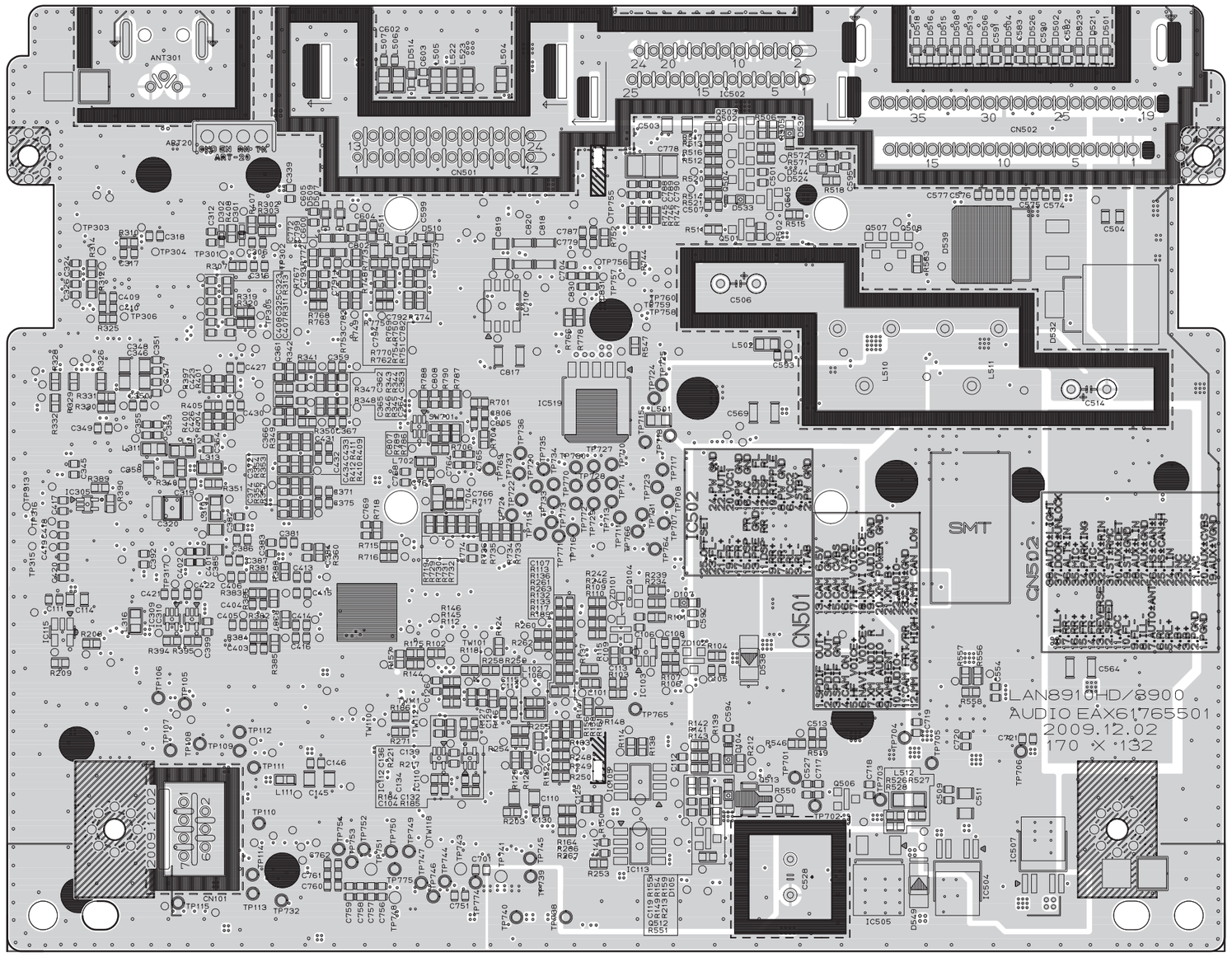


No	NAME
1	USB/IPOD GND
2	USB D+/IPOD_RX
3	USB D-/IPOD_TX
4	USB/IPOD_5 V

AUDIO PRINTED CIRCUIT BOARD (TOP VIEW)



AUDIO PRINTED CIRCUIT BOARD (BOTTOM VIEW)

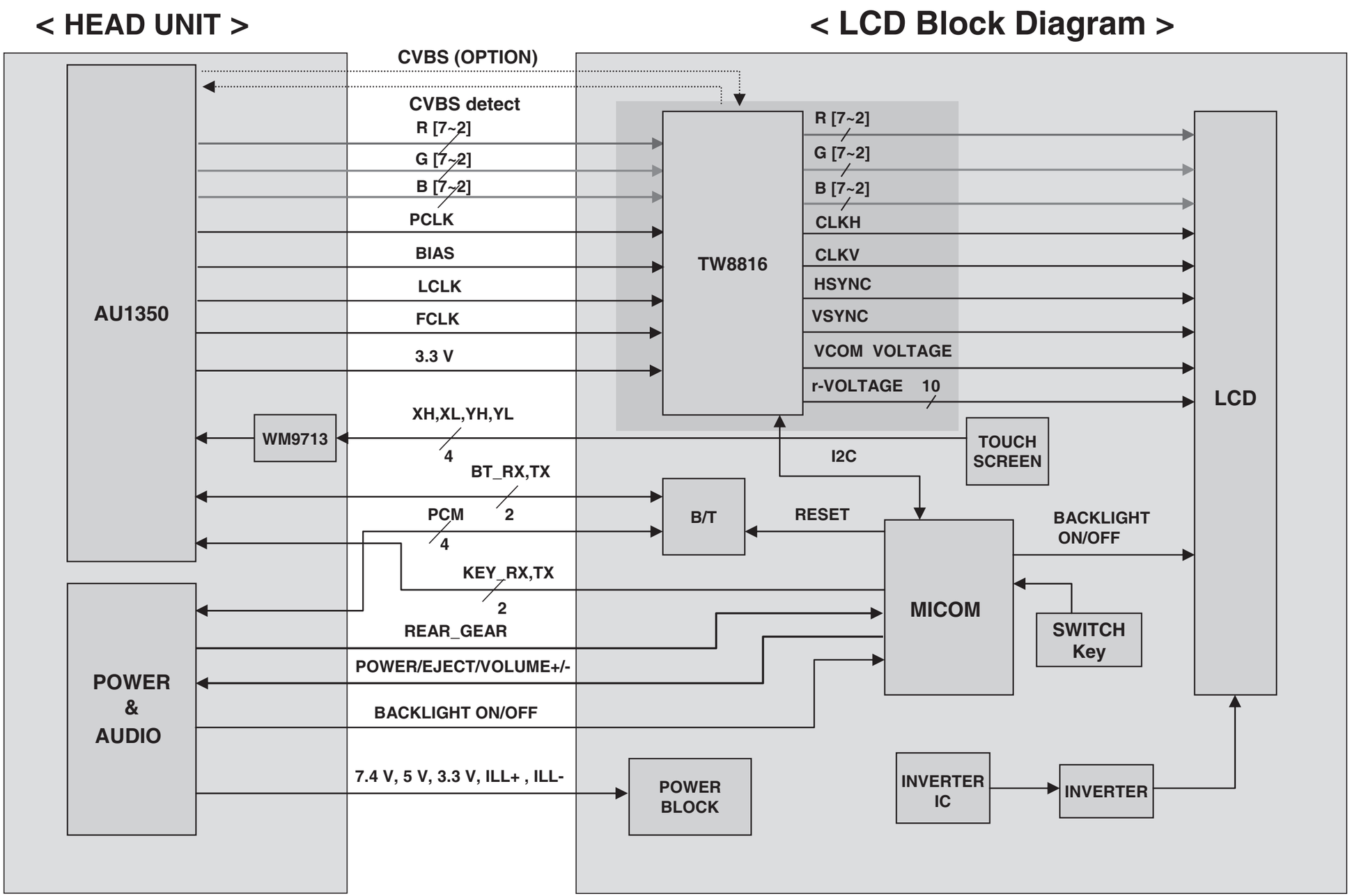


SECTION 7. FRONT PART

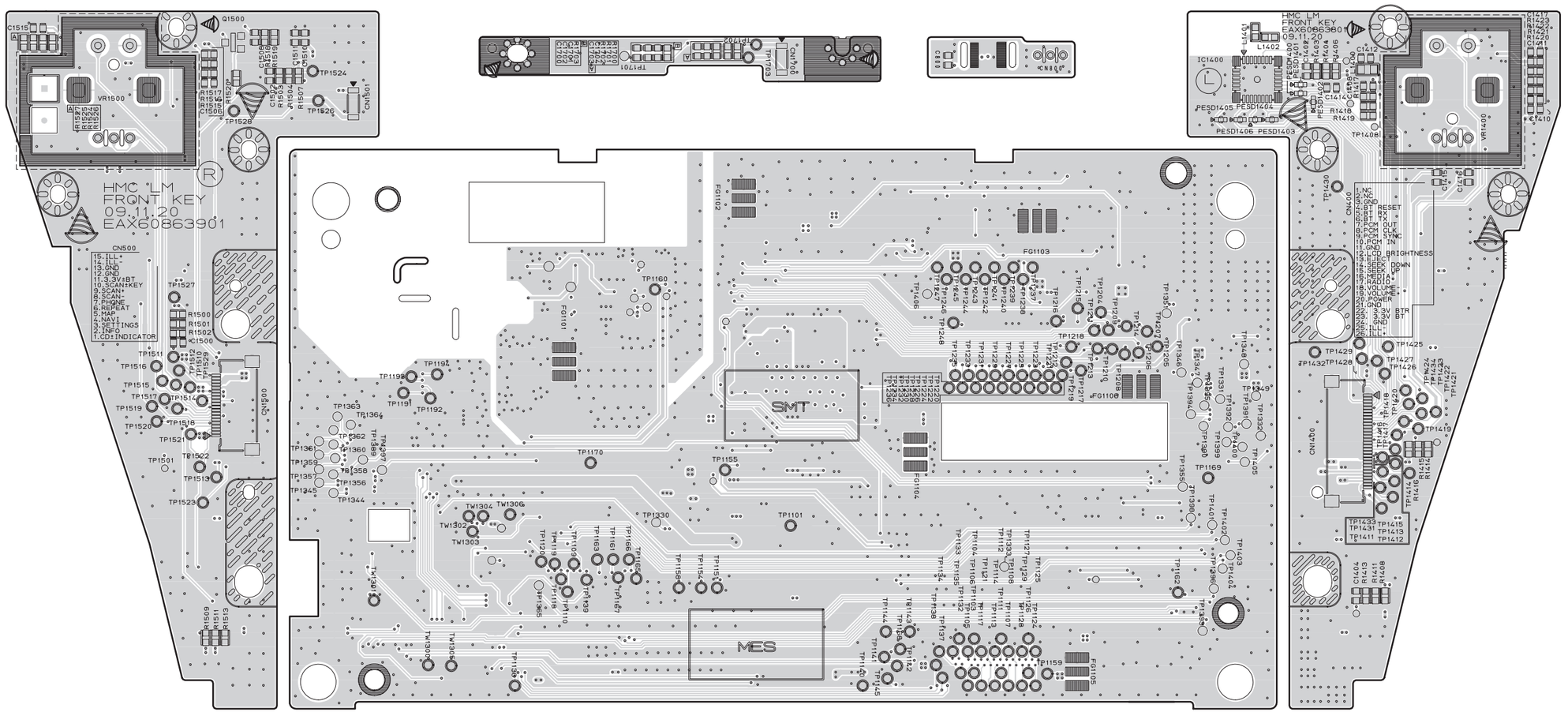
[CONTENTS]

• FRONT BLOCK DIAGRAM 7-1
• FRONT PRINTED CIRCUIT BOARD (TOP VIEW) 7-3
• FRONT PRINTED CIRCUIT BOARD (BOTTOM VIEW) 7-5

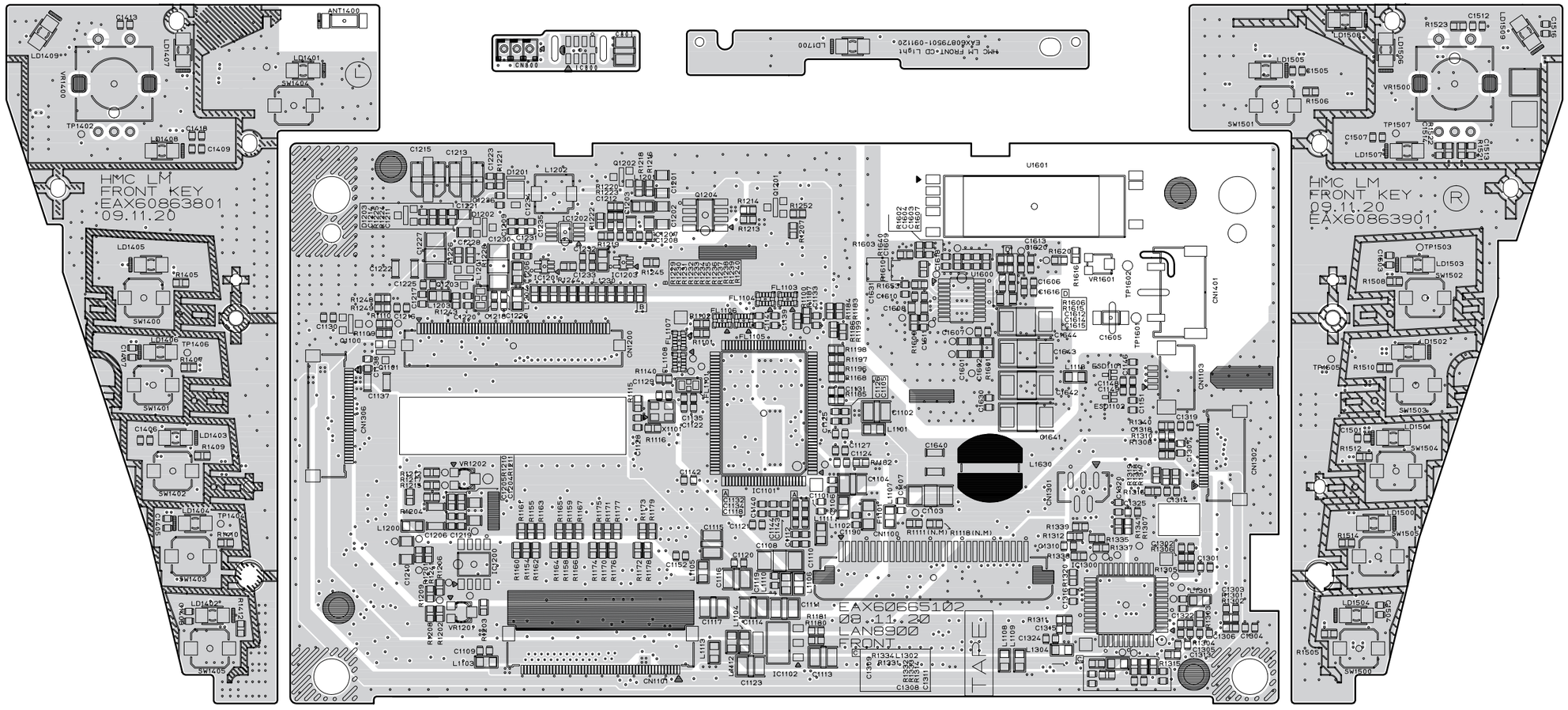
FRONT BLOCK DIAGRAM



FRONT PRINTED CIRCUIT BOARD (TOP VIEW)



FRONT PRINTED CIRCUIT BOARD (BOTTOM VIEW)



SECTION 8. GPS PART

[CONTENTS]

• GPS BLOCK DIAGRAM 8-1
• GPS PRINTED CIRCUIT BOARD (TOP VIEW) 8-3
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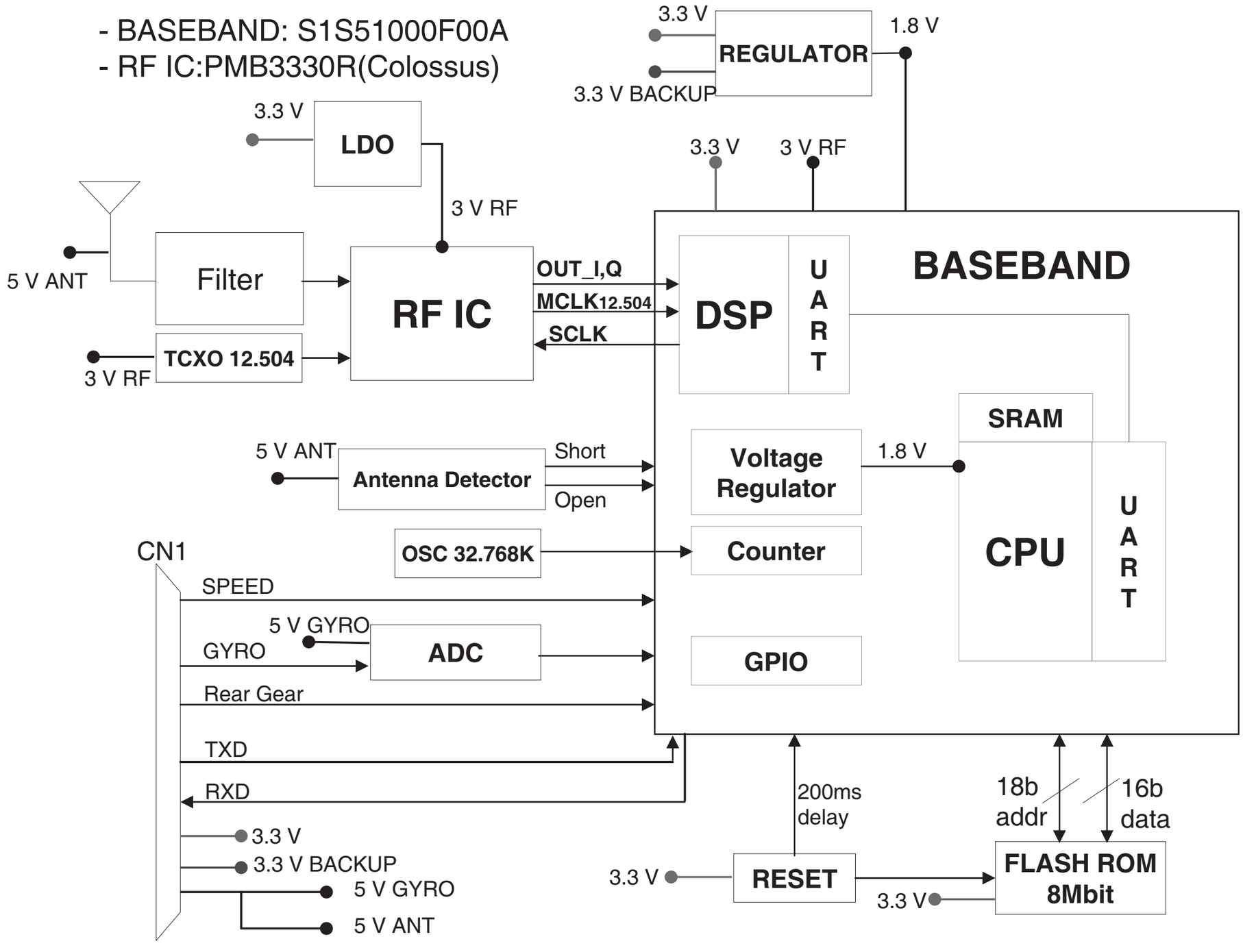
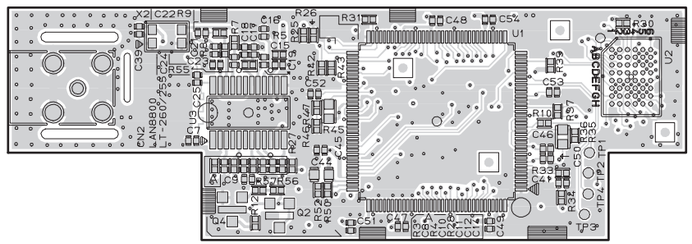
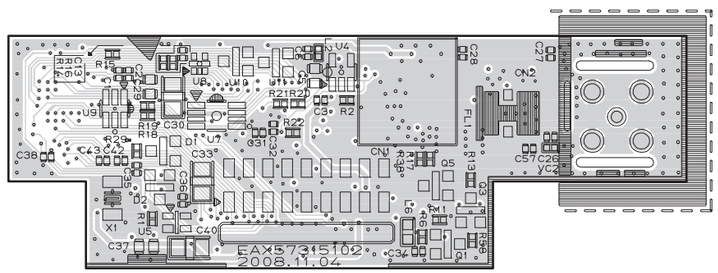
GPS BLOCK DIAGRAM



GPS PRINTED CIRCUIT BOARD (TOP VIEW)



GPS PRINTED CIRCUIT BOARD (BOTTOM VIEW)



MEMO

SECTION 9. TROUBLESHOOTING GUIDE

[CONTENTS]

• GENERAL PART (NAVIGATION) 9-1

GENERAL PART (Navigation)

Cannot identify the current location. (GPS not receiving)

GPS cannot be used indoors and must be connected to the power with ACC in a vehicle in a location where the sky can be received easily.
When initially connecting the GPS, it usually takes about 10 minutes to be working normally, but the connection speed can differ depending on the weather condition, and surrounding obstacles.
If the GPS connection is unstable for a long period of time, try the following.

- Check if the product is connected to a power source.
- Check if the back of the GPS product is in a location where the sky can be seen well.
- If there are high buildings or if you are under a tree, move to a location where there aren't any obstacles.
- Check the GPS receiving condition from the GPS menu.

Cannot hear the voice guide.

Check that volume is set to Mute to very small volume in the setup menu.
No guide sound comes out in the case of straight sector or not in the guide time.
In this case, an appropriate sound in the current position if pressing the NAVI button.

There is a difference between the driving road and the road on the map in the product.

Even though GPS is usually very accurate, there is a small margin for error.
When the GPS receiver is installed, there can be an error of about 10m. But for newly built roads, the problem could come from the data update to the map.

Cannot see the map.

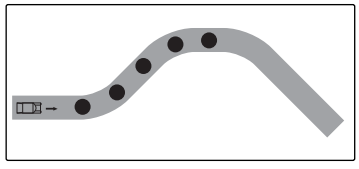
Perhaps you cannot see the map even when you have executed the navigation menu.
This happens when the data within the memory is damaged. Delete all the data in the memory and install the data again.
If the issue persists after installation, contact the A/S center.

The path guide can be different from the actual path.
(Path guide error)

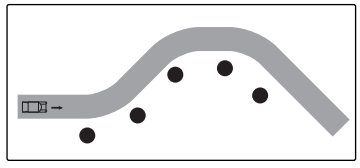
- When the road is closely parallel.
- When the splitting road angle is very small.
- When there is an adjacent road when turning.
- When driving on a road that is narrowing fast.
- When driving through the mountain or where the road is too curvy.
- When the starting, passing and arriving locations are too close within 1km.
- When you have set the starting, passing or arriving location more than 1km away from the road.
- When driving through the tunnel.

Map matching

As mentioned, the GPS systems used by this Mobile Navigation System are susceptible to certain errors. Their calculations may on occasion place you in a location the map where no road exists. In this situation, the processing system understands that vehicles travel only on roads, and is able to correct your position by adjusting it to a nearby road. This is called map matching.



With map matching.



With no map matching.

Symptom	Cause	Correction
Power doesn't turn on. The unit doesn't operate.	• Leads and connectors are not properly connected.	• Confirm once more that all connections are correct.
	• The fuse is blown.	• Rectify the problem that caused the fuse to blow, and then replace it. Be very sure to install the correct fuse with the same rate.
	• Noise and other factors are causing the builtin microprocessor to operate incorrectly.	• Turn the unit off and then on.
Playback is not possible.	• The disc is dirty.	• Clean disc.
	• The loaded disc is of a type this unit cannot play.	• Check what type the disc.
No sound is heard. The volume level will not rise.	• Cables are not connected correctly.	• Connect the cables correctly.
There's no sound.	• The volume level is low.	• Adjust the volume.
There's audio skipping.	• This unit is not firmly secured.	• Secure this unit firmly.
The unit does not operate correctly even when the appropriate remote control buttons are pressed.	• Some operations are prohibited with certain discs.	• Check using another disc.

Trouble Shooting Guide

No	Symptom	Correction
1	The Sceen is White. Case1) 1) It is partially white screen. 2) All Button is working.	Replace Front Assy's
2	The Screen is White. Case2) 1) It is completely white screen. 2) All Button is not working.	Replace Main BD
3	CD Deck is not Working. 1) No play CD 2) No insert CD	Replace CD Deck
4	No Sound First, Check as below. 1)Check CD Sound 2)Check Radio Sound	Replace Audio BD